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# Efficacy of Topical Risedronate and Risedronate - Eudragit E Complex in a Model of *Cutaneous leishmaniasis* induced by Leishmania (Leishmania) Amazonensis †

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**Abstract:** An efficacious topical treatment for cutaneous leishmaniasis (CL) is desirable but still an ongoing challenge. Systemic risedronate (Ris) has been reported to have antileishmanial properties, and Eudragit EPO (EuE) has shown *in vitro* activity against *L.(L.) amazonensis.* The aim of this work was to investigate the *in vivo* efficacy of topical Ris and EuE-Ris complexes on CL. *In vivo* antileishmanial activity was assessed in a BALB/c mice infected intradermally with promastigotes of *L.(L.) amazonensis*. The lesions were topically treated twice daily with EuE-Ris and Ris in HPMC-hydrogels. Lesion appearance, immunoglobulin levels, smears, and parasitic inhibition in the lesions, were analyzed compared to an untreated group. Ris and EuE-Ris treatments significantly reduced lesions size, flattened edges, and ulcers compared to untreated mice. Besides, a marked parasitic inhibition of the lesions was found (69.5% and 73.7%, respectively). At the end of the treatment, remaining parasites were found in both groups; however, the amastigotes in EuE-Ris group showed vacuoles and a less compact nucleus suggesting a higher efficacy, probably related to the antileishmanial complementary action of EuE. The IgG2a/IgG1 difference ratios tended to increase in both groups. The results are promising, and the system should be enhanced to achieve total parasite elimination.

**Keywords:** *Cutaneous leishmaniasis*; Risedronate; Eudragit; topical treatment; *Leishmania amazonensis.*



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## Conflicts of Interest

The authors declare no conflict of interest.